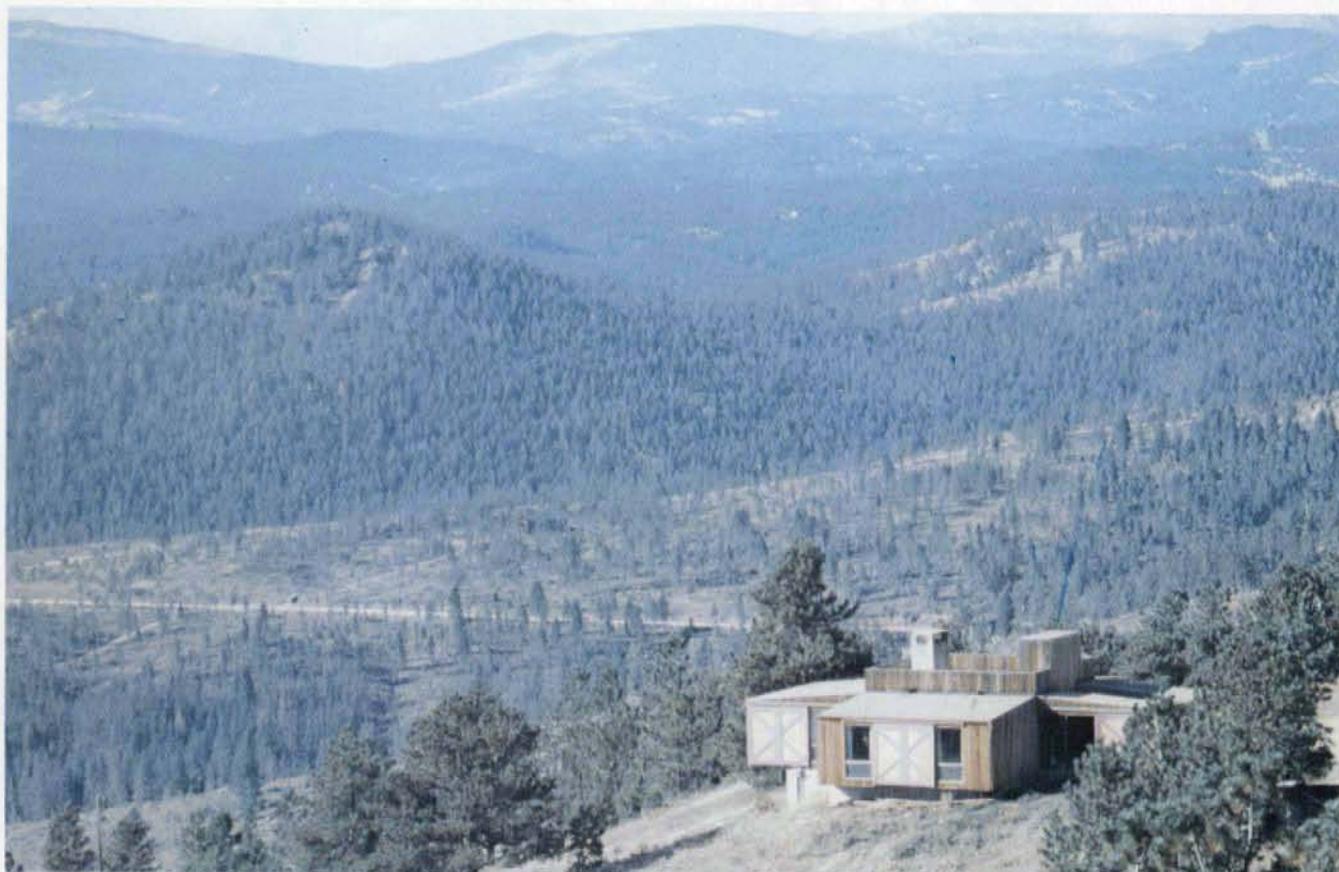




**FRONT RANGE VEGETATIVE MANAGEMENT PILOT PROJECT**  
**Final Report**





# Front Range Vegetative Management Pilot Project

## FINAL REPORT

October 1, 1977 — September 30, 1979

*Report prepared by Nan Brownell Pirnack  
NewsSystems  
Boulder, Colorado*



*An example of a well-managed stand of young ponderosa pine thinned during the project. Grasses, shrubs and vigorous cone-producing trees will increase availability of wildlife food.*

October 1, 1977 -- September 30, 1979

**About the cover:**

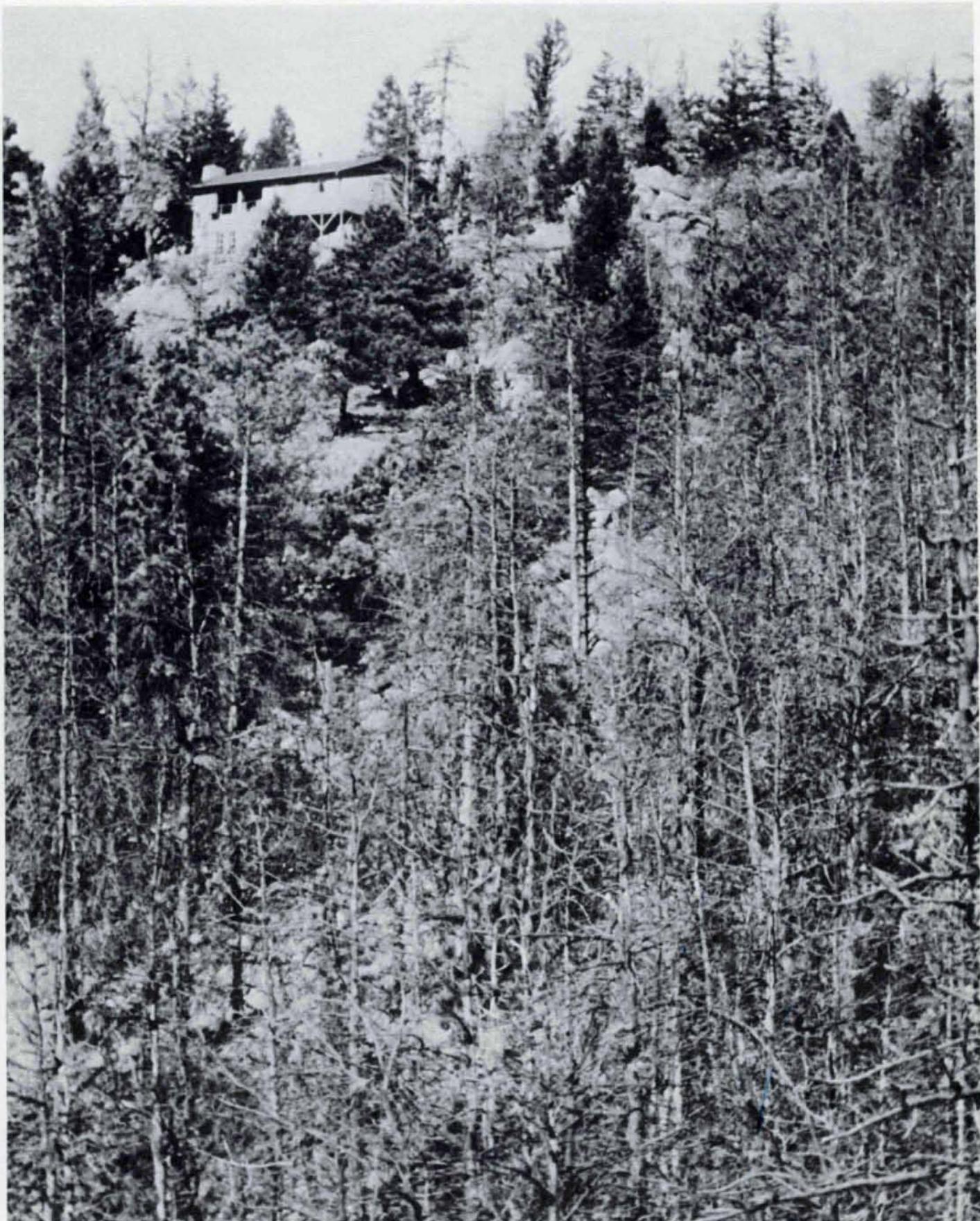
Top photo shows result of a devastating MPB attack west of Sugarloaf Mountain. Two years later (bottom photo), the brown, beetle-killed pines were removed and stands thinned. Managed stands mean a healthier forest for the future.

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*Some areas were more badly damaged than others in the Front Range Project area. This home sits atop a stand of ponderosa pine visited by the MPB.*

# The Front Range Project story:

## New life for a dying forest

New life for a dying forest along the Front Range of Colorado resulted from concentrated efforts by five government agencies. The Forest Service (USDA), Colorado State Forest Service, County of Boulder, City of Boulder and Bureau of Land Management (USDI) joined together in a unique cooperative undertaking under the title Front Range Vegetative Management Pilot Project (Front Range Project). After two years and thousands of hours of labor, the Front Range Project forest was revitalized with hope for a bright future.

Foresters had been concerned for some time with the urgent need for forest management in the area. The forest was unhealthy, a condition marked by stands of dying trees. The sickly forest quickly fell victim to the mountain pine beetle (MPB) which attacked weakened ponderosa pine trees, painting the forest an unsightly brown from dying trees the beetle left behind.

Results of the MPB onslaught awakened area landowners to the situation's urgency. Landowners' pleas to legislators for funds to fight the MPB were joined by requests from foresters for monies for overall management.

The Colorado State Forest Service (CSFS) proposed a forest management concept for private landowners about the same time the USFS proposed a project for federal lands. With need also apparent on city and county parklands and BLM property, a joint meeting of concerned agencies and landowners was held in Boulder in 1977. Obvious benefits of a cooperative approach to the MPB crisis plus need for long-range management practices gave birth to the innovative concept behind the Front Range Project.

According to one participant in the joint venture, the cooperative approach meant cutting through a lot of red tape to expedite on-the-ground accomplishments.



City, County, State, and Federal officials toured the Front Range Project area to observe the results of the unique cooperative effort.

Gene  
Lassard  
- Entomologist -  
USFS-R2-FPM

5

Someone in USFS-R2  
? George Downing?

Kan Lister  
Entomologist  
USFS-R2-FPM

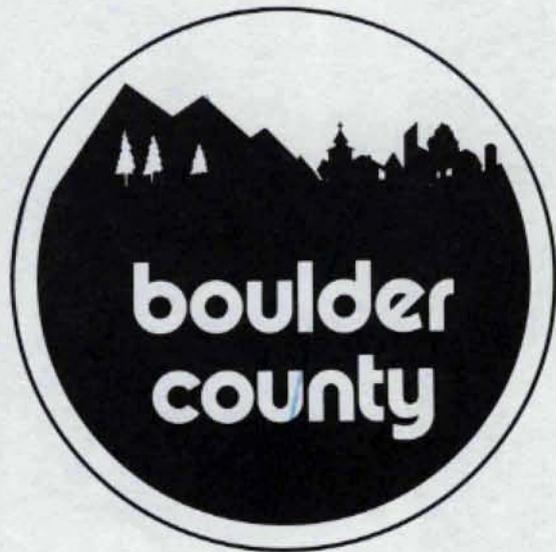
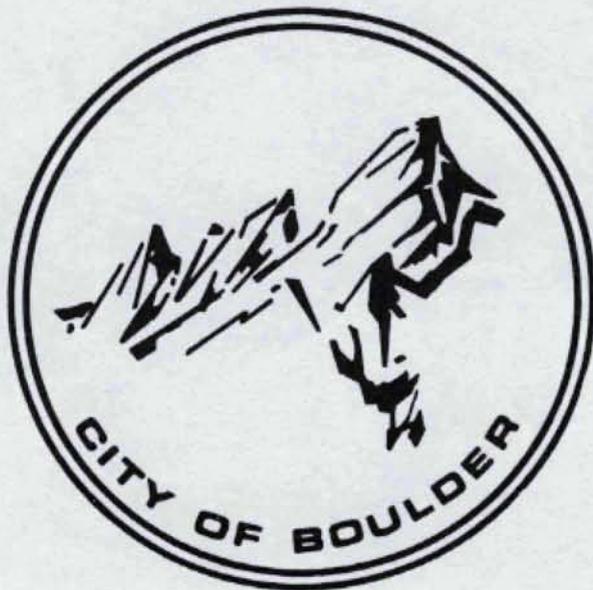


Figure 1. Five government agencies joined in a cooperative effort in the Front Range Project.

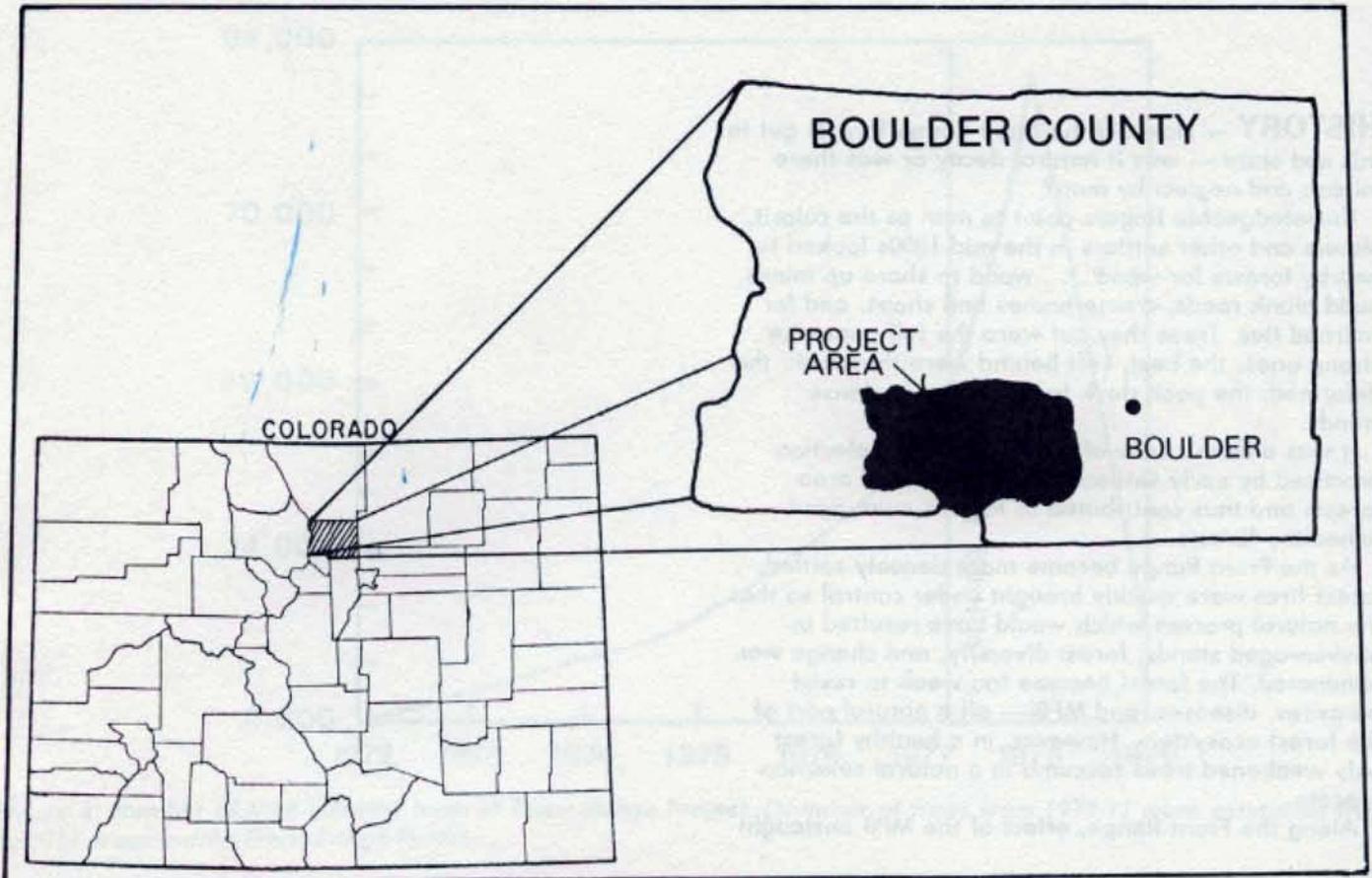


Figure 2. Front Range Project location map.

Another official stated the eventual success of the project was only possible because of cooperation between agencies.

The project began officially October 1, 1977 on 34,500 acres within 50 square miles of Boulder County; a one-year extension was granted through September 30, 1979.

Emphasis on forest management efforts in the pilot project area was:

- Insect control and prevention
- Wildlife habitat improvement
- Fire hazard reduction
- Timber stand improvement
- Improvement of scenic beauty
- Forest regeneration
- Watershed improvement
- Landowner and agency cooperation

Benefits derived from the cooperative venture included not only an abundance of firewood for commercial and private use, but many new industries and hundreds of jobs (some encompassing on-the-job training for future employment skills).

Homeowners in the project area rallied to the MPB fight and formed their own crews to treat infested trees on their own and neighboring land. Many worked alongside crews to control beetles before they could fly again.

Federal, state, local, and private funds were used in the Front Range Project. Public funds were granted by legislators with a vision that a healthy Front Range forest offers many economic benefits to Colorado citizens.

**HISTORY** — How did the Front Range forests get to this sad state — was it natural decay or was there misuse and neglect by man?

Knowledgeable fingers point to man as the culprit. Miners and other settlers in the mid 1800s looked to nearby forests for wood . . . wood to shore up mines, build plank roads, create homes and shops, and for railroad ties. Trees they cut were the tall ones, the strong ones, the best. Left behind were the weak, the deformed, the poor stock to reproduce in dense stands.

It was a classic case of reverse natural selection practiced by early settlers who high-graded area forests and thus contributed to today's even-aged, unhealthy forests.

As the Front Range became more densely settled, forest fires were quickly brought under control so that the natural process which would have resulted in uneven-aged stands, forest diversity, and change was eliminated. The forest became too weak to resist parasites, diseases, and MPB — all a natural part of the forest ecosystem. However, in a healthy forest only weakened trees succumb in a natural selection process.

Along the Front Range, effect of the MPB onslaught



If you look closely you can spot four trains chugging along the Switzerland Trail heading out of Sunset west of Boulder. Wood for railroad ties and for mines dotting the hills came from these sparse forests.

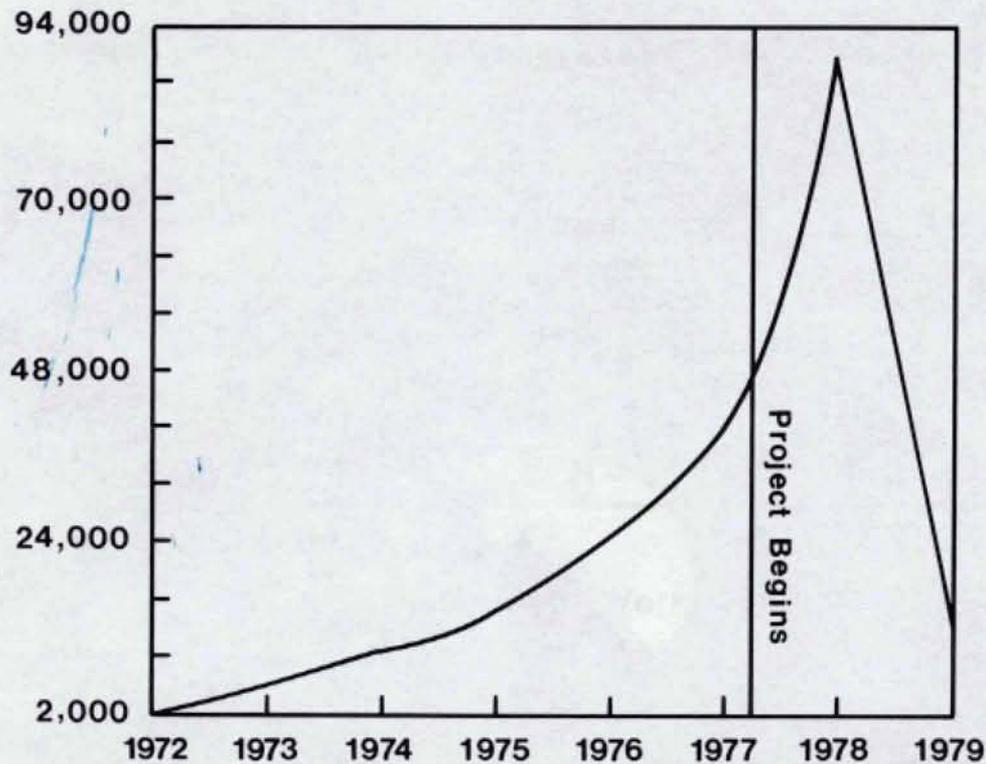


Figure 3. Number of MPB infested trees in Front Range Project. (Number of trees from 1972-77 were estimated from control areas within Front Range Project.)

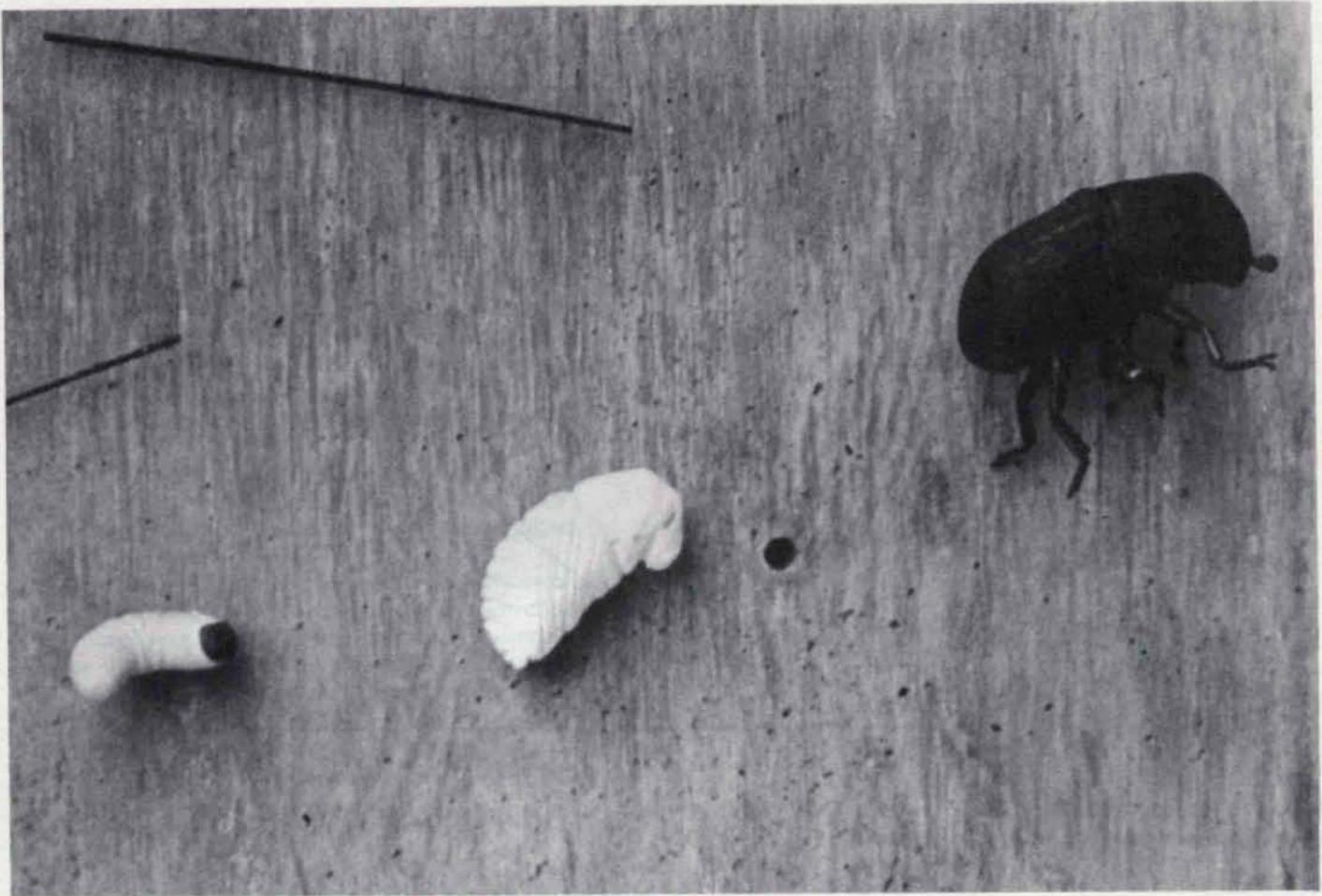
was a disaster — the beetle killed an estimated 2 million trees by 1975. Piecemeal efforts to control the beetle had been mostly ineffective due to the scope of the problem.

Dwarf mistletoe and western spruce budworm also ran rampant, compounding conditions created by the pine beetle epidemic.

During 1977-78, the first year of the Front Range Project, more than 73,000 beetle-infested trees were cut and treated by landowners and crews in an intensive effort to stop the brown plague. Imagine the satisfaction to those involved in the battle when only 12,500 infested trees were found in the project area the next year. And 10,500 of those trees were subsequently treated.

Infested trees were removed for commercial processing or treated with ethylene dibromide (EDB) or lindane. A refined process for treatment eventually saw crews covering stacks of infested wood with plastic. The plastic was then slit so that pesticide could be sprayed with a minimum of danger to the crew. Slits were finally sealed with tape.

Green hillsides now, compared to thousands of beetle trees two years ago, attest to the success of pine beetle control in the pilot project area (see cover).



Three stages of MPB.

## **What's a MPB?**

The mountain pine beetle (MPB) is a black insect about the length of a match head. The nasty critters bore through bark on live pines, thus making channels between bark and wood. Eggs are laid during this process. Eggs hatch into soft-bodied grubs who are hungry! Grubs burrow horizontally and actually girdle the tree. As if this isn't enough, beetles bring spores of bluestain fungus into the tree, causing clogging of the tree's water conducting system. The tree weakens and rapidly dies of thirst.

MPB has a one-year life cycle covering four developmental stages. Eggs hatch in the fall and the insect spends winter as larvae. Pupae in early summer, they turn into adults and leave infested trees to attack new ones during August.

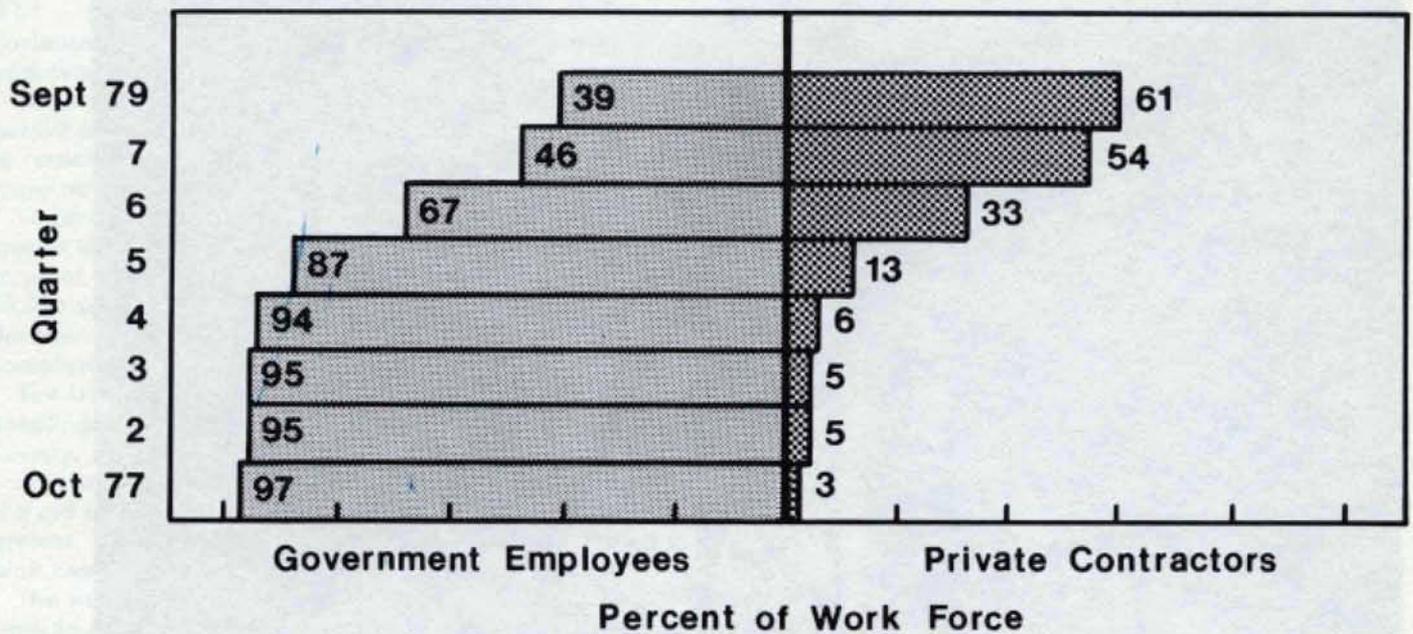


Figure 4. Front Range Project work force trends.

**CREWS** — The mini-dragon was slain through cooperative efforts of many under the overall direction of agency foresters.

Crew members were of varied backgrounds and interests with many simply wanting to work out-of-doors and learn forestry skills. Men and women crew members worked side by side marking infested trees, cutting them, and piling slash. Homeowners rallied to protect their property.

Unexpected aid came from a diversity of groups including Colorado's Outward Bound Inmate Work Program from Canon City, Boulder County Juvenile Corrections Program, a class in log cabin construction from the Boulder Community Free School, and Boy Scouts.

The Forest Service (USDA) had crews from the Young Adult Conservation Corps (YACC). Boulder County, CSFS, and the federal Forest Service also employed youth from the Comprehensive Employment and Training Act (CETA).

Independent contractors did much of the work as well. Foresters held "show-me's" where contractors could look at work to be done and then submit bids.



In some areas, crews piled slash to break up fuel continuity. Fuelwood quality timber as shown in this photo was removed either by commercial operators or through managed public firewood gathering.



*Timber Stand Improvement (TSI) removes ailing trees and leaves a forest reborn and growing. Sunlight has a chance to reach green shoots (after photo below).*

**TSI** — During concentrated efforts to halt the MPB onslaught, attention was also paid to timber stand improvement (TSI).

Thick stands of pine and aspen were thinned to permit availability of soil nutrients, sunlight and water to remaining healthier trees. The result is a forest more able to withstand attacks by pests and parasites.

Once damaged trees were removed and dense stands thinned, landowners and foresters joined forces to plant thousands of fir and spruce trees. At least 15,000 seedlings were planted on private and City of Boulder lands. Over 1500 private landowners completed forest management practices.

The USFS planted nearly 11,000 ponderosa pine seedlings in two areas of national forest in Boulder County.

A local Boy Scout troop reseeded nearly 15 acres at the old townsite of Sugarloaf as part of an Eagle Scout project. Nine willing helpers planted 31,000 ponderosa pine seeds in beetle-damaged areas.

The number of Tree Farms in Boulder County rose from four to 11 during the Front Range Project. In Colorado, state-employed foresters act as Tree Farm inspectors under the auspices of the American Forest Institute. This organization gives recognition to private landowners who use their land to produce forest products under sustained yield forest management.

Such management involves thinning, harvesting, and planting for forest improvement. This is accomplished under guidance of a prepared plan.

The American Forest Institute, sponsored by the forest industry, recognizes that in the future, private landowners will have to contribute a large percentage of the country's timber needs.



*Brush piles were carefully constructed throughout the Project area for small mammal protection.*



*Scouts, landowners, contractors, and foresters joined forces to plant trees and shrubs for reforestation and wildlife habitat improvement.*

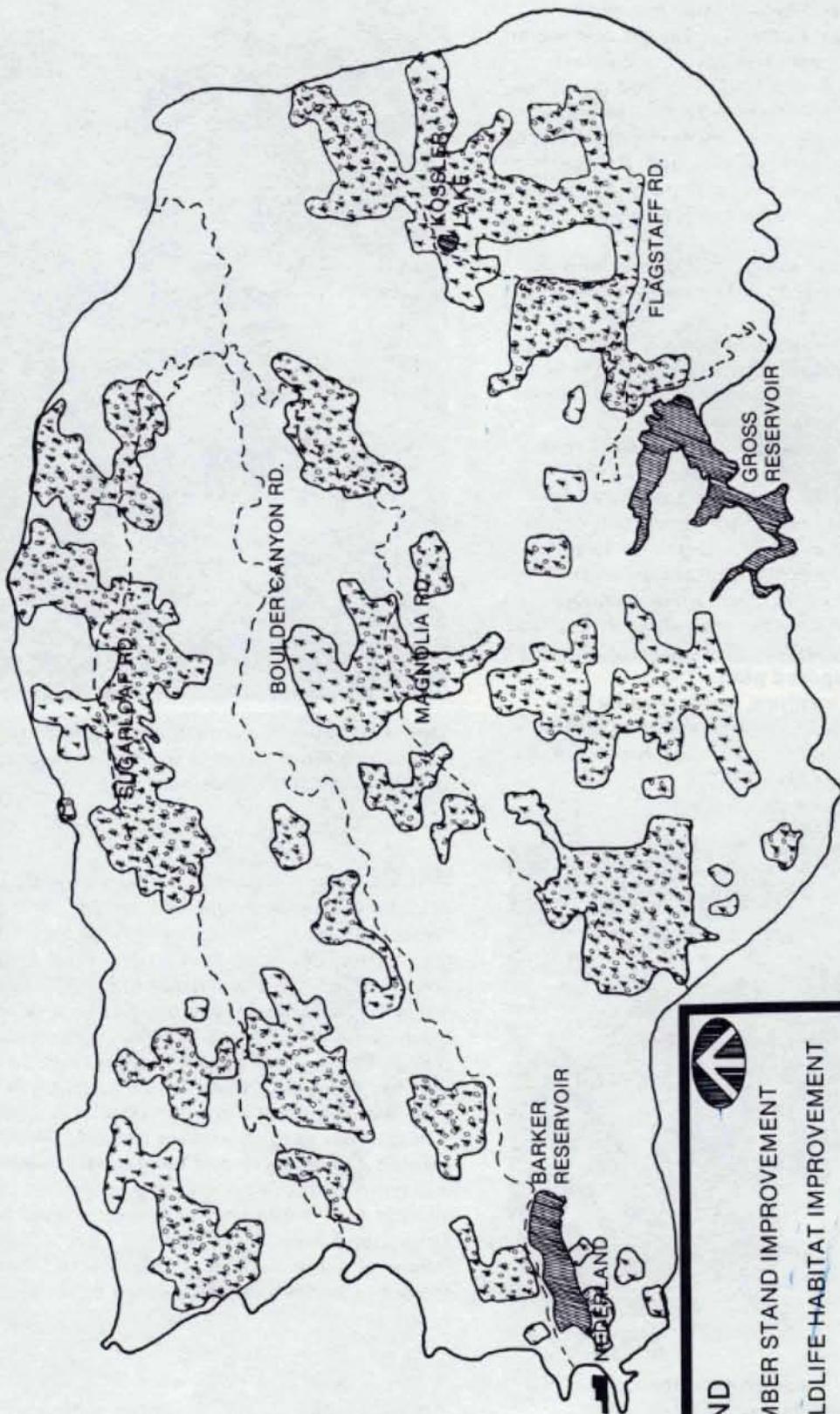
**WILDLIFE** — Forest conditions directly affect wildlife. Forest management within the Front Range Project means much improved habitat for deer, elk, grouse, turkey, bear, and a number of birds.

A prescription was written to benefit roaming elk herds in the Nederland area. Aspen and competing conifers were patch cut by YACC to stimulate food production for grazing elk. Aspen slash was left as browse. A multitude of nest or roost trees and wildlife piles were left as refuge for smaller animals.

In another special wildlife project, YACC members planted chokecherry and serviceberry seedlings. Buds and twigs of these species are preferred browse for elk and deer while berries are consumed by grouse, turkey, and bear.

Special wildlife trees were protected throughout the project to insure needed wildlife havens.

# FRONT RANGE PILOT PROJECT



**LEGEND**

-  NORTH
-  WILDLIFE HABITAT IMPROVEMENT
-  TIMBER STAND IMPROVEMENT

\*NO SCALE

Figure 5. Wildlife habitat and timber stand improvement in the Project area.



*Landowners, once convinced of the importance of the work, were happy to join in practicing forestry on their own and neighbors' property.*

**LANDOWNER PARTICIPATION** — Alarm over brown, dying forests initially prompted area landowners to seek aid from county, state, and federal foresters. This was followed by questions concerning forest management practices.

Why was it necessary to cut living trees in thinning practices?

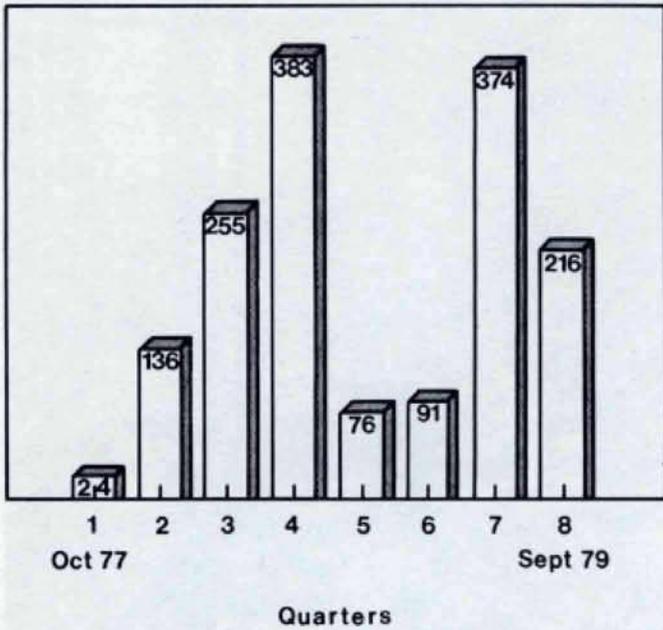
Why couldn't the beetle-infested wood be hauled away without treatment?

Initially, some residents questioned or complained about a variety of new things happening in the woods.

Front Range Project agencies mounted a public information campaign via meetings, newsletters, and personal contacts to answer questions and alleviate concerns. Attention given to public information at the beginning of the Project paid off . . . complaints soon slowed to a trickle.

Through education by foresters, 1555 private landowners completed forest management practices including thinning of living trees. A new appreciation of the esthetic quality of a managed forest near one's home was matched by a growing woodpile for use during the energy crisis. Realization that a managed forest lessened fire hazards was also met with enthusiasm.

Foresters had originally hoped the budget would allow for disposal of slash left from forest management practices. This would help ease



landowners' concern about "an unsightly mess." When it became apparent that this would be possible only in limited amounts, a public information campaign was again launched to inform landowners of proper slash disposal methods. Such landowner efforts left more funds for actual management work.

A special piece of equipment, a Fleco roller chopper, worked wonders. After one pass through an area, dead branches were broken into one-foot lengths with minimal soil disturbance. Again the result of a cooperative venture, the roller chopper was loaned by the USFS. A Boulder County tractor was used to operate the chopper.

Figure 6. Landowners completing management practices.



A healthier forest and abundant fuel for the winter bring a smile to this landowner.

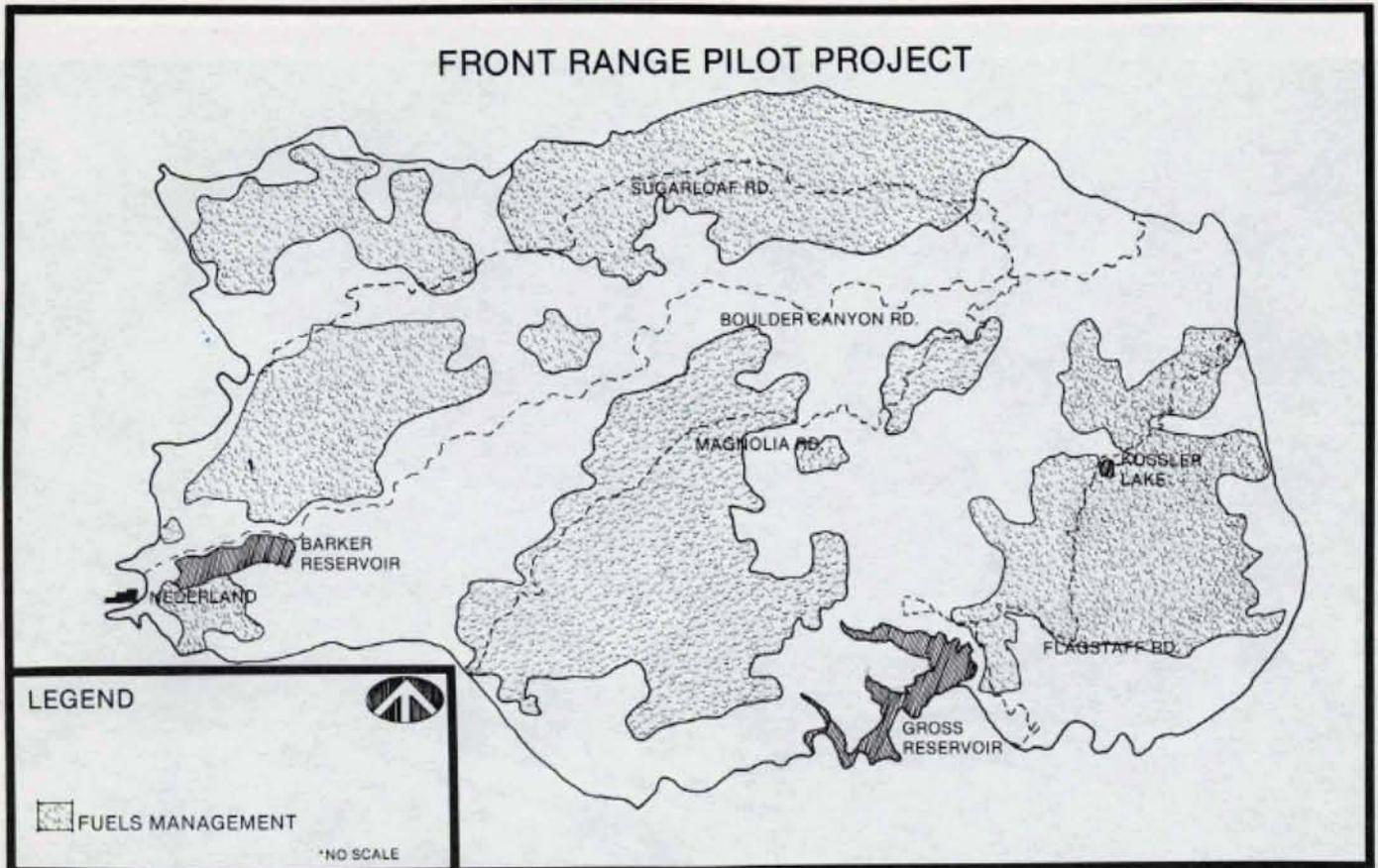
**FUEL REDUCTION** — Wildfires feed on grass, trees and underbrush. Forest management practices in the Front Range Project mean that chances of a crown fire are significantly reduced. The removal of dead, tinder-dry trees by logging, fuelwood sales, and public firewood gathering has made the forest west of Boulder safer to live near . . . and in.

In addition to treating dead and living fuels, a more sophisticated fire alert system is now present in Boulder County. A fire weather station at the City of Boulder water treatment plant gathers data for the nationwide AFFIRMS system used by all federal agencies and 35 state agencies. Daily broadcasts notify officials and citizens of current fire danger.

The expanded set-up was prompted by the Front Range Project. The station was equipped by the USFS, participants were trained by the CSFS, and a city employee collects data and transmits it to the Boulder County computer terminal.



*Huge piles of slash disappear in a flash, crushed by the roller chopper.*



*Figure 7. Fuels management.*



*Firewood is collected by these youths as one benefit to homeowners in the Front Range Project area.*

**PROJECT BENEFITS** — Benefits of the Front Range Project include higher woodpiles from beetle control and thinning on private and public lands. A quantity of timber was also available to be worked by private contractors. Logging trucks and pickups brought the rich harvest to area sawmills where lumber for area building became more readily available and often at a lower price.

The beetle left behind another benefit — beautiful blue-stained pine which soon decorated area homes.

By-products from area sawmills included sawdust for use in nearby stables, firewood from slabs left from the milling process, and shavings from the planing mill.

Woodcutters, loggers, skidders, carpenters, contractors, mill workers, and truckers, all benefited from the resurging lumber industry in Boulder County.

Local unemployment was reduced. During 1978-79 nearly 200 forestry jobs were created for CETA employees.

At the Project's beginning, there were only two active forestry contractors in Boulder County; at the end, there were over 20.

Money was returned to Boulder County's general fund through forest management work. The amount earned through timber sales, contracting on private land, public firewood cutting, and wholesale firewood sales exceeded the amount allocated for forestry operations.



*Commercial loggers use more sophisticated techniques in harvesting timber from the Front Range Project area.*



*In 1977, City of Boulder's Cathedral Park area consisted mainly of dense tree stands (upper photo). Two years and a forest management project later, there's plenty of room for the public to enjoy recreation on this reclaimed forest land.*



Beetle killed timber from the Front Range Project was used for the new main entrance gate to Walker Ranch, a Boulder County open space property.

**SCENIC QUALITY** — An objective of the Front Range Project was improvement of esthetic qualities on public and private lands along the Front Range. This area of Colorado takes pride in its beautiful surroundings. City and county parks in the nearby mountains offer opportunities for all to get closer to this beauty.

The City of Boulder concentrated forest management efforts in Cathedral Park. New vistas await picnickers and hikers. Where once dense stands of trees stood, there are now scenic vistas of high mountain peaks. Improved wildlife habitat means more animals to enjoy.

Farther up Flagstaff Mountain west of Boulder is the Walker Ranch, part of the open space land for Boulder County. A heavily-used recreation area since its opening in 1978, Walker Ranch hosts hikers, fishermen, horseback riders, hang gliders, rock climbers, picnickers . . . all of whom will enjoy the result of forest management work.

An improved watershed is an off-shoot of a cooperative forest management effort between the CSFS and Denver Water Board. Over 36 acres surrounding Gross Reservoir were selectively thinned after a particularly damaging MPB attack. The Denver Water Board had fought back for several years, but were relieved to hand the battle over to the Front Range Project.

Again, the result of forest management practices means a more attractive recreation area for picnickers and hikers to that high country body of water. It's so much easier to watch the sun set over the water now that dense stands have been thinned. Care was also taken to enhance wildlife habitat in the area.



Hikers in Cathedral Park will enjoy reopened views of far mountain peaks

# What happens next?

**WHAT NOW** — Now that the official end of the Front Range Project has been announced, what happens next?

Work in the area is not finished . . . it has only just begun.

The MPB population is significantly reduced. Any new MPB infested trees can be handled routinely by agencies and landowners without much difficulty. There will be some infight, but fundamentally beetles in the Front Range Project have been beaten.

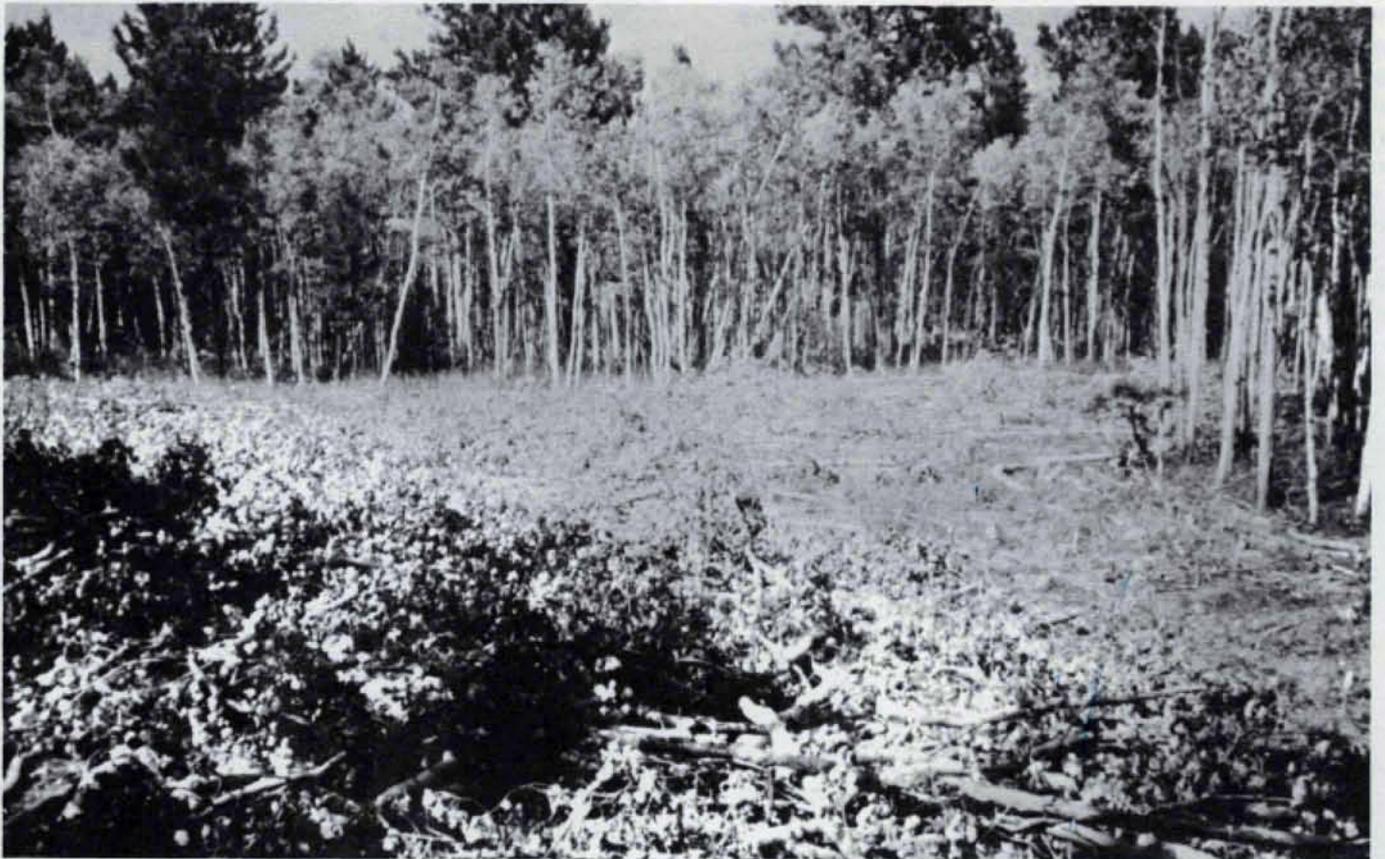
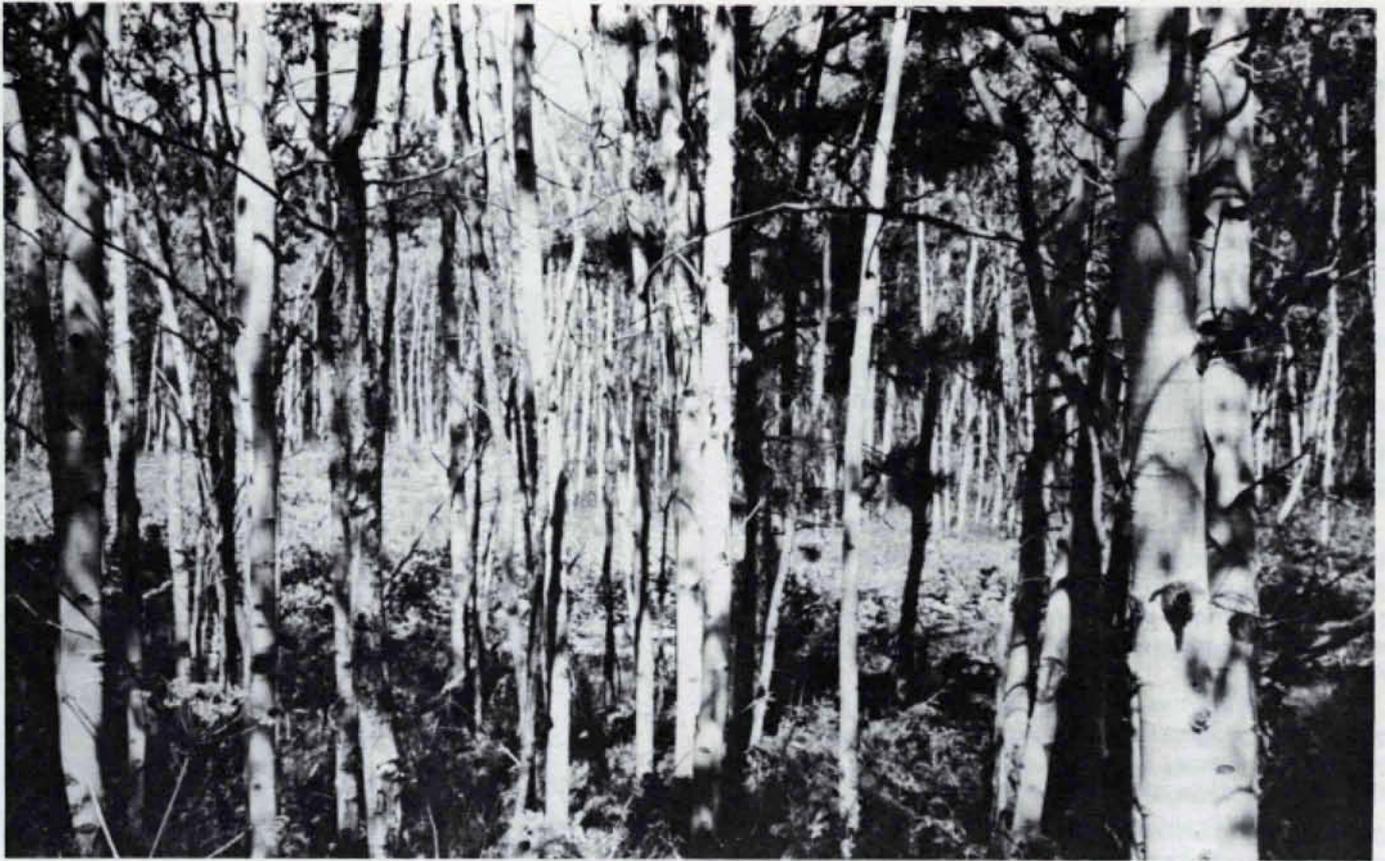
But this is only one part of forest management. Stands thinned under the Front Range Project should be reentered in 10 to 15 years for commercial thinning to maintain a many-aged forest. If foresters are permitted to mark trees to be cut, a healthier forest will result.

One of the greater benefits of the project is that cooperative programs in forestry can intensively manage more acres in mixed ownership than can otherwise be done. In the Front Range Project each agency lent expertise in the cooperative venture . . . one agency would not have had manpower or funds to do the job alone.

What once were brown hillsides are now green. The wildflower display in the spring of 1979 hadn't been seen for years in the area . . . attributable to abundant moisture and sunlight which reached the ground after thinning. Already more shrubs are growing in the Front Range Project area and more Colorado gold will be available as aspen regeneration practices begin to pay off.

Boulder County will see a continuing cooperative venture in the Allenspark area. Here, the MPB has left its toll and there is a severe need for management of both private and public lands. The St. Vrain-Left Hand area will see efforts over the next five years as well.

It's a hopeful beginning . . . but there's a lot more work to be done in the dynamic Front Range forest of Colorado.



*Aspen regeneration is aided by patch cutting as demonstrated in this before and after example. Deer and elk will also benefit from new feeding areas.*

# COLORADO FRONT RANGE VEGETATIVE MANAGEMENT PILOT PROJECT

## FINANCIAL SUMMARY 10/1/77 — 9/30/79

ACTIVITY	ACCOMPLISHMENT	DOLLARS
YACC		\$ 810,000
CETA		882,000
THINNING	9039A	755,787
WILDLIFE HABITAT IMPROVEMENT	8013A	115,684
DIRECT MPB CONTROL	83,638T	*841,346
REFORESTATION	745A	80,650
FUELS MANAGEMENT	14,520A	*862,855
NOXIOUS WEED CONTROL	29A	2,900
RECREATION	4738A	21,198
FIRE PROTECTION		*77,600
ADMINISTRATION/PLANNING/FOREST SURVEY		395,600
<b>TOTAL</b>		<b>\$4,845,620</b>

\*DOES NOT INCLUDE PRIVATE COOPERATIVE QUALIFYING EXPENDITURE.



*These before and after photos (identical photo point) show results of fuel treatment to reduce wildlife hazard as part of the overall forest management effort.*